

	Type	L #	Hits	Search Text	DBs	Time Stamp
1	BRS	L1	135	((read\$3 or reproduc\$3) same ((record\$3 or writ\$3) NEAR10 ("while" or concurrent\$2 or simultaneous\$2 or ("same" ADJ time))) same (transducer or head)).ab. and (disk or disc)	USPAT	2004/02/05 09:55
2	BRS	L2	124	((record\$3 or writ\$3) same ((read\$3 or reproduc\$3) NEAR10 ("while" or concurrent\$2 or simultaneous\$2 or ("same" ADJ time))) same (transducer or head)).ab. and (disk or disc)	USPAT	2004/02/05 09:55
3	BRS	L3	166	L1 or L2	USPAT	2004/02/05 09:15
4	BRS	L4	19	(sens\$3 same ((record\$3 or writ\$3) NEAR10 ("while" or concurrent\$2 or simultaneous\$2 or ("same" ADJ time))) same (transducer or head)).ab. and (disk or disc)	USPAT	2004/02/05 09:16
5	BRS	L5	18	((record\$3 or writ\$3) same (sens\$3 NEAR10 ("while" or concurrent\$2 or simultaneous\$2 or ("same" ADJ time))) same (transducer or head)).ab. and (disk or disc)	USPAT	2004/02/05 09:16
6	BRS	L6	24	L4 or L5	USPAT	2004/02/05 09:16
7	BRS	L7	18	((read\$3 or reproduc\$3) same ((record\$3 or writ\$3) NEAR10 ("while" or concurrent\$2 or simultaneous\$2 or ("same" ADJ time))) same (transducer or head)).ab. and (disk or disc)	US-PGP UB	2004/02/05 09:53
8	BRS	L8	17	((record\$3 or writ\$3) same ((read\$3 or reproduc\$3) NEAR10 ("while" or concurrent\$2 or simultaneous\$2 or ("same" ADJ time))) same (transducer or head)).ab. and (disk or disc)	US-PGP UB	2004/02/05 09:53

	Type	L #	Hits	Search Text	DBs	Time Stamp
9	BRS	(L9)	23	L7 or L8	US-PGP UB	2004/02/05 09:53
10	BRS	(L10)	1	((sens\$3 same ((record\$3 or writ\$3) NEAR10 ("while" or concurrent\$2 or simultaneous\$2 or ("same" ADJ time))) same (transducer or head)).ab. and (disk or disc)	US-PGP UB	2004/02/05 09:53
11	BRS	(L11)	4	((record\$3 or writ\$3) same (sens\$3 NEAR10 ("while" or concurrent\$2 or simultaneous\$2 or ("same" ADJ time))) same (transducer or head)).ab. and (disk or disc)	US-PGP UB	2004/02/05 09:53
12	BRS	(L12)	27	((read\$3 or reproduc\$3) same ((record\$3 or writ\$3) NEAR10 ("while" or concurrent\$2 or simultaneous\$2 or ("same" ADJ time))) same (transducer or head)).ab. and (disk or disc)	EPO	2004/02/05 10:16
13	BRS	(L13)	22	((record\$3 or writ\$3) same ((read\$3 or reproduc\$3) NEAR10 ("while" or concurrent\$2 or simultaneous\$2 or ("same" ADJ time))) same (transducer or head)).ab. and (disk or disc)	EPO	2004/02/05 10:16
14	BRS	L14	0	((sens\$3 same ((record\$3 or writ\$3) NEAR10 ("while" or concurrent\$2 or simultaneous\$2 or ("same" ADJ time))) same (transducer or head)).ab. and (disk or disc)	EPO	2004/02/05 10:15
15	BRS	L15	0	((record\$3 or writ\$3) same (sens\$3 NEAR10 ("while" or concurrent\$2 or simultaneous\$2 or ("same" ADJ time))) same (transducer or head)).ab. and (disk or disc)	EPO	2004/02/05 10:16

	Type	L #	Hits	Search Text	DBs	Time Stamp
16	BRS	L16	376	((read\$3 or reproduc\$3) same ((record\$3 or writ\$3) NEAR10 ("while" or concurrent\$2 or simultaneous\$2 or ("same" ADJ time))) same (transducer or head)).ab. and (disk or disc)	JPO	2004/02/05 10:36
17	BRS	L17	330	((record\$3 or writ\$3) same ((read\$3 or reproduc\$3) NEAR10 ("while" or concurrent\$2 or simultaneous\$2 or ("same" ADJ time))) same (transducer or head)).ab. and (disk or disc)	JPO	2004/02/05 10:37
18	BRS	L18	442	L16 or L17	JPO	2004/02/05 10:16
19	BRS	L19	66	L18 not L16	JPO	2004/02/05 10:17
20	BRS	L20	8	(sens\$3 same ((record\$3 or writ\$3) NEAR10 ("while" or concurrent\$2 or simultaneous\$2 or ("same" ADJ time))) same (transducer or head)).ab. and (disk or disc)	JPO	2004/02/05 10:34
21	BRS	L21	5	((record\$3 or writ\$3) same (sens\$3 NEAR10 ("while" or concurrent\$2 or simultaneous\$2 or ("same" ADJ time))) same (transducer or head)).ab. and (disk or disc)	JPO	2004/02/05 10:34
22	BRS	L22	11	L20 or L21	JPO	2004/02/05 10:34
23	BRS	L23	103	((read\$3 or reproduc\$3) same ((record\$3 or writ\$3) NEAR10 ("while" or concurrent\$2 or simultaneous\$2 or ("same" ADJ time))) same (transducer or head)).ab. and (disk or disc)	DERWEN T	2004/02/05 10:44

	Type	L #	Hits	Search Text	DBs	Time Stamp
24	BRS	L24	94	((record\$3 or writ\$3) same ((read\$3 or reproduc\$3) NEAR10 ("while" or concurrent\$2 or simultaneous\$2 or ("same" ADJ time))) same (transducer or head)).ab. and (disk or disc)	DERWEN T	2004/02/05 10:44
25	BRS	L25	118	L23 or L24	DERWEN T	2004/02/05 10:37
26	BRS	L26	15	L25 not L23	DERWEN T	2004/02/05 10:37
27	BRS	L27	5	(sens\$3 same ((record\$3 or writ\$3) NEAR10 ("while" or concurrent\$2 or simultaneous\$2 or ("same" ADJ time))) same (transducer or head)).ab. and (disk or disc)	DERWEN T	2004/02/05 10:51
28	BRS	L28	6	((record\$3 or writ\$3) same (sens\$3 NEAR10 ("while" or concurrent\$2 or simultaneous\$2 or ("same" ADJ time))) same (transducer or head)).ab. and (disk or disc)	DERWEN T	2004/02/05 10:51
29	BRS	L29	9	L27 or L28	DERWEN T	2004/02/05 10:42
30	BRS	L30	0	((read\$3 or reproduc\$3) same ((record\$3 or writ\$3) NEAR10 ("while" or concurrent\$2 or simultaneous\$2 or ("same" ADJ time))) same (transducer or head)).ab. and (disk or disc)	IBM_TD B	2004/02/05 10:43
31	BRS	L31	21	((read\$3 or reproduc\$3) same ((record\$3 or writ\$3) NEAR10 ("while" or concurrent\$2 or simultaneous\$2 or ("same" ADJ time))) same (transducer or head)) and (disk or disc)	IBM_TD B	2004/02/05 10:44

	Type	L #	Hits	Search Text	DBs	Time Stamp
32	BRS	L32	115	((record\$3 or writ\$3) same ((read\$3 or reproduc\$3) NEAR10 ("while" or concurrent\$2 or simultaneous\$2 or ("same" ADJ time))) same (transducer or head)) and (disk or disc)	DERWEN T	2004/02/05 10:44
33	BRS	L33	20	((record\$3 or writ\$3) same ((read\$3 or reproduc\$3) NEAR10 ("while" or concurrent\$2 or simultaneous\$2 or ("same" ADJ time))) same (transducer or head)) and (disk or disc)	IBM_TD B	2004/02/05 10:44
34	BRS	L34	29	L31 or L33	IBM_TD B	2004/02/05 10:44
35	BRS	L35	9	(sens\$3 same ((record\$3 or writ\$3) NEAR10 ("while" or concurrent\$2 or simultaneous\$2 or ("same" ADJ time))) same (transducer or head)) and (disk or disc)	IBM_TD B	2004/02/05 10:51
36	BRS	L36	1	((record\$3 or writ\$3) same (sens\$3 NEAR10 ("while" or concurrent\$2 or simultaneous\$2 or ("same" ADJ time))) same (transducer or head)) and (disk or disc)	IBM_TD B	2004/02/05 10:52
37	BRS	L37	10	L35 or L36	IBM_TD B	2004/02/05 10:52

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DISCLOSURE TITLE: Simultaneous Write and Read

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DISCLOSURE TEXT:

This document contains drawings, formulas, and/or symbols that will not appear on line. Request hardcopy from ITIRC for complete article.

- Disclosed is a technique to write Non-Staggered Servo Pattern efficiently. This technique is applicable to Servo Track Writer (STW hereafter) for Hard Disk Drive (HDD hereafter) which needs Non-Staggered Servo Pattern of Sector Servo. The concept of this technique is to execute servo pattern

write by write and read

simultaneously against either write or read at a time presently. The

read is performed to verify written servo pattern just after the write is completed.

- Servo Pattern Write and user data write are executed through

Arm Electronics (AE hereafter) module inside of HDD. Present AE

module has the capability to execute either write or read at a time.

This technique is to change the AE module with adding a special input

line. This line is activated during Servo Pattern Write and

deactivated during user pattern write.

- When the special line in Fig. 1 is activated for Servo Pattern

Write, read operation (verification of previous written data) is

performed during next write operation simultaneously. For example,

in the case of HDD of 2 heads, timing chart is shown as Fig. 2.

- Actual implementation is executed by following circuit shown in

Fig. 3 which shows an example of one head write and one head read

simultaneously inside of AE module.

- This example is for the HDD which has 2 heads. But this can be

applied on HDD's which have more heads than 2.

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Fig.1

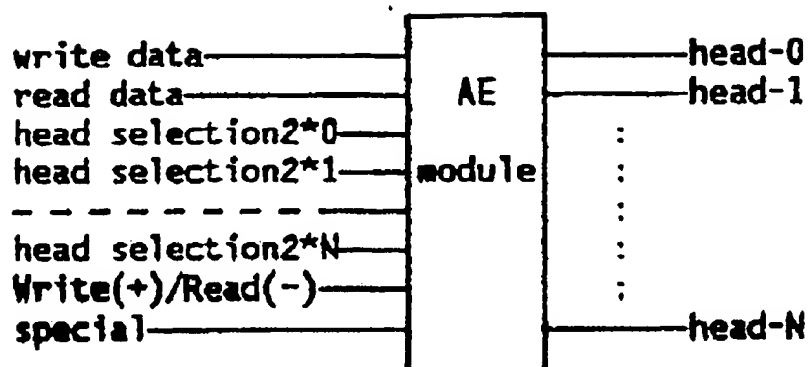


Fig.2

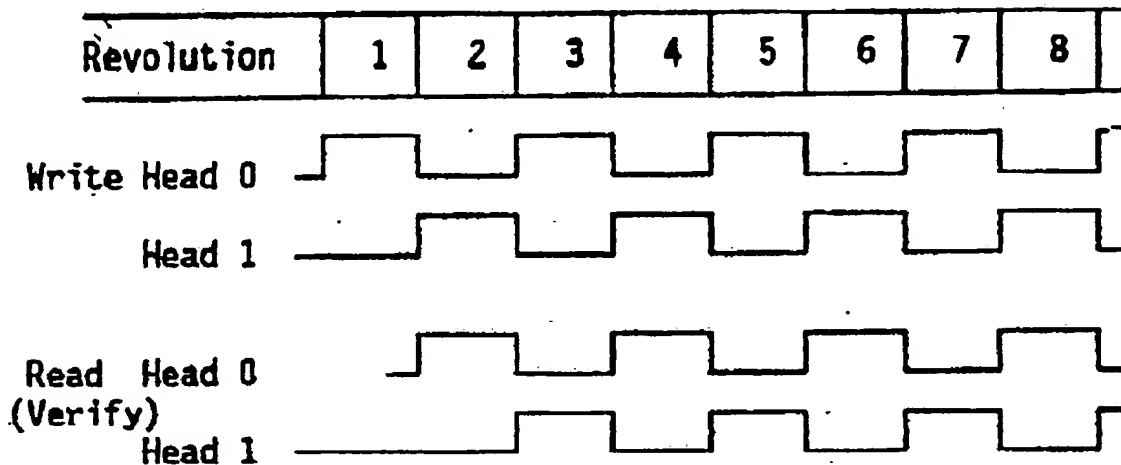


Fig.3

